



**Billing Code: 4510.43-P**

**DEPARTMENT OF LABOR**

**Mine Safety and Health Administration**

**Petitions for Modification of Application of Existing Mandatory Safety Standards**

**AGENCY:** Mine Safety and Health Administration, Labor.

**ACTION:** Notice.

**SUMMARY:** Section 101(c) of the Federal Mine Safety and Health Act of 1977 and 30 CFR Part 44 govern the application, processing, and disposition of petitions for modification. This notice is a summary of petitions for modification submitted to the Mine Safety and Health Administration (MSHA) by the parties listed below to modify the application of existing mandatory safety standards codified in Title 30 of the Code of Federal Regulations.

**DATES:** All comments on the petitions must be received by the Office of Standards, Regulations and Variances on or before [Insert date 30 days from the date of publication in the FEDERAL REGISTER].

**ADDRESSES:** You may submit your comments, identified by “docket number” on the subject line, by any of the following methods:

1. **Electronic Mail:** [zzMSHA-comments@dol.gov](mailto:zzMSHA-comments@dol.gov). Include the docket number of the petition in the subject line of the message.
2. **Facsimile:** 202-693-9441.

3. Regular Mail or Hand Delivery: MSHA, Office of Standards, Regulations and Variances, 1100 Wilson Boulevard, Room 2350, Arlington, Virginia 22209-3939, Attention: Sheila McConnell, Acting Director, Office of Standards, Regulations and Variances. Persons delivering documents are required to check in at the receptionist's desk on the 21<sup>st</sup> floor. Individuals may inspect copies of the petitions and comments during normal business hours at the address listed above.

MSHA will consider only comments postmarked by the U.S. Postal Service or proof of delivery from another delivery service such as UPS or Federal Express on or before the deadline for comments.

**FOR FURTHER INFORMATION CONTACT:** Barbara Barron, Office of Standards, Regulations and Variances at 202-693-9447 (Voice), [barron.barbara@dol.gov](mailto:barron.barbara@dol.gov) (E-mail), or 202-693-9441 (Facsimile). [These are not toll-free numbers.]

## **SUPPLEMENTARY INFORMATION:**

### **I. Background**

Section 101(c) of the Federal Mine Safety and Health Act of 1977 (Mine Act) allows the mine operator or representative of miners to file a petition to modify the application of any mandatory safety standard to a coal or other mine if the Secretary of Labor determines that:

1. An alternative method of achieving the result of such standard exists which will at all times guarantee no less than the same measure of protection afforded the miners of such mine by such standard; or

2. That the application of such standard to such mine will result in a diminution of safety to the miners in such mine.

In addition, the regulations at 30 CFR 44.10 and 44.11 establish the requirements and procedures for filing petitions for modification.

## **II. Petitions for Modification**

Docket Numbers: M-2014-007-M; M-2014-008-M; M-2014-009-M; M-2014-010-M; M-2014-011-M; M-2014-012-M; M-2014-013-M; M-2014-014-M; M-2014-015-M; M-2014-016-M; M-2014-017-M; and M-2014-018-M.

Petitioner: Wilson County Holdings, LLC, 950 17<sup>th</sup> Street, Suite 2600, Denver, Colorado 80202.

Mine: Fredonia Project, MSHA I.D. No. 14-01756, located in Wilson County, Kansas.

Regulations Affected: 30 CFR 57.22301(a), 30 CFR 57.22301(b)(2)(i) and 30 CFR 57.22301(c) (Atmospheric monitoring systems (I-A, II-A, and V-A mines)); 30 CFR 57.22302 (Approved equipment (I-A and V-A mines)); 30 CFR 57.22312 (Distribution boxes (II-A and V-A mines)); 30 CFR 22501 (Personal electric lamps (I-A, I-B, I-C, II-A, II-B, III, IV, V-A , and V-B mines)); 30 CFR 57.22207 and 30 CFR 22207(b)(1) (Booster fans (I-A, II-A, III, and V-A mines)); 30 CFR 57.22227(a) and 30 CFR 57.22227(c)(1) (Approved testing devices (I-A, I-B, I-C, II-A, II-B, III, IV, V-A, and V-B mines)); 30 CFR 57.22234 and 57.22234(b) (Actions at 1.0 percent methane (I-A, I-B, III, V-A, and V-B mines)).

Modification Request: The petitioner requests a modification of the existing standards stating that the operator is not required to comply with the standards at its Fredonia, Kansas Oil Extraction Project (the Fredonia Project) but instead may substitute equipment classified as explosion proof by the National Electric Code (NEC). By filing this petition, the petitioner does not concede that the cited standards applies or will apply

in the future. However, should the standards be applied, it will result in a diminution of safety to the miners.

The petitioner states that:

(1) The filing of this petition should not be construed in any way, or in any subsequent forum, as a waiver of Wilson County Holding's right to contest any citation issued pursuant to the regulation listed above at any time in the future.

(2) The Fredonia Project is among the latest of a handful of underground oil recovery projects. In general, conventional oil recovery only recovers a relatively small percentage of the oil in place. In addition, modern developments intended to increase that recovery, such as horizontal and directional drilling, are subject to a variety of technological limitations which make them unsuitable for conventional recovery methods in certain circumstances, such as fields at depths less than 2400 feet. Therefore, the majority of the recoverable resource in many older, shallower fields is stranded in place because recovery is either uneconomical or not technically feasible.

(3) The Fredonia Project addresses the recoverability issue by sinking a shaft through the oil bearing formation and mining out a room approximately 10-20 feet below the bottom of the formation. All underground areas will be completely lined with concrete or shotcrete and there will be no exposed ground at the time that equipment installation and operations begin. Special ports are preinstalled in the wall of the production area through which the wells are to be drilled. These ports are designed to be integrated into the drilling process and there will be no additional penetration of the shotcrete lining.

(4) When the underground area is completed, three drill rigs will be installed in the round portion of the underground area (the production room) to drill upward into the formation allowing oil to drain out naturally. The oil will be collected into pipes and closed vessels and pumped out to the surface for transport to a refinery.

(5) The drilling process to be used at the Fredonia Project is quite similar to that used at conventional oil and gas drilling sites. The bit used is slightly bigger than the drill pipe on which it is mounted. During drilling, specially formulated “drilling mud” is pumped into the hole at a pressure intended to remove cuttings and to hold back any surges in formation pressure that may lead to uncontrolled flow of gases or fluids uphole. The mud is then circulated back uphole through the annulus around the drill pipe, carrying with it the cuttings from the drill as well as any water or hydrocarbons that are released. The entire mixture is collected in a sealed system in which the mud, cuttings, water, and hydrocarbons are pumped to the surface where they are separated and treated appropriately. Although a small amount of the used mud mixture might be exposed to the mine atmosphere during routine drilling operations, the only circumstances in which any material amount of the used mud mixture or any of its components could escape into the mine atmosphere would be either where a spike in formation pressures overwhelmed the controls in the collection system, where a leak developed in the system, or in the event of a component malfunction. As with other conventional drilling operations, great care is taken during the drilling process to ensure that no gases or fluids escape back up the drill hole as it is advanced toward the target. Those precautions become increasingly intensive as the drill approaches the hydrocarbon bearing formation. In the case of the Fredonia Project, all systems intended for collection of drilling fluids are designed to

withstand pressures of up to 740 Pounds Per Square Inch Gauge (psig) even though tests show that formation pressures are not anticipated to exceed 100 psig.

(6) Because it is vitally important for both the safety of the miners and the commercial success of the project, quite a bit of care has been taken in developing a monitoring system intended to detect any condition that might lead to an escape of hydrocarbons or other toxic material from the system. In general, the detection and monitoring systems are digitally based, automated and remotely monitored. A variety of sensors (e.g., lower explosive limit (LEL), methane, smoke, system pressures, temperature), digitally measure and transmit the data measured to different locations. The data can be monitored remotely from the surface and is made accessible to those authorized to see it. Each monitoring system is also programmed to either: (1) alert personnel and/ or (2) automatically trigger corrective action (e.g., increase ventilation or open or close valves) and/or (3) shut down critical operations in the event a pre-set alarm, corrective action, or shut-down level is exceeded. This is known as a “fail-to-safe” system. In other words, critical component failure, or excursion of a measured value above or below a set point is programmed to automatically trigger a condition-appropriate response, up to and including critical system shut down.

(7) In addition to the monitoring and control systems, the petitioner recognizes the importance of the ventilation system as integral to its overall safe operation. Ventilation for normal operations begins at the surface near the entrance to the Supply Air Emergency Escape Shaft. There are 2-100 horse power fans whose speed is controlled by variable frequency drives (VFD’s) with a butterfly-type valve shutoff damper at the downstream exit of each fan duct located just upstream of the plenum. The fans will

operate in a “Lead-Lag” configuration where one fan operates continuously (lead) and is supported by the back-up (lag) in the event the lead fan is inoperable or is cycled for wear issues. Each fan has a 56,000 cfm capacity at 1.75 in-wg for fan blade 2-position at 1800 revolutions per minute. The VFD’s are part of the fan control system providing control of flow rates. Air flow progresses as follows:

(a) Air is drawn into the fan inlet then flows through the Supply Air Shaft into the underground Alcove. From the Alcove a portion of the supply air is forced through cooling coils and then into the Motor Control Center (MCC) Room. This air removes heat from the area then exits via a duct to the main hoist opening in the Drilling Room. The MCC ductwork (28 inches in diameter) and the discharge duct (54 inches by 18 inches) to the main shaft is galvanized steel.

(b) The balance of the air remaining in the Alcove then exits via a flow regulator (roll-up door) where it then ventilates the Pump Room and Drilling Room areas.

(c) Air is circulated around the Drilling Room by three axial flow fans located on the Rib or Back to ensure thorough mixing and movement of air.

(d) All air flows then converge to exit upwards via the Main Shaft to the surface and atmosphere.

Ventilation flow is to help ensure that workers and staff have adequate ventilation and that the MCC Room maintains a positive relative pressure to the Pump and Drilling Rooms, and this air is exhausted directly to the main shaft.

The supply air fans provide more than 100 percent back up as a standby, or to provide higher velocity and flow through the mine as needed. Approximate total air quantity is expected to be 25,000 cfm allowing for up to 14 people underground,

operation of diesel skid steer loader underground, heat removal from equipment and personnel, and dilution of potential contaminants including strata gas. Adjustments will be made to meet requirements for cooling and contaminant dilution as necessary.

Notwithstanding the fact that the system is deliberately “over-designed” in terms of anticipated pressures and is virtually 100 percent monitored in a fail-to-safe configuration, the petitioner recognizes that there is a possibility that some componentry or instrumentation may be exposed to a potentially flammable or explosive level of hydrocarbon(s). For that reason, all of the components and systems that are being used in areas that could possibly be hydrocarbon contaminated have some measure of explosion protection. Because the facility is regulated by MSHA, a great deal of effort was expended to secure electrical components that have been certified as “permissible” or “explosion proof” by MSHA. However, after extensive effort, with respect to a number of critical components, the petitioner has been unable to locate any of those critical components that have been certified as permissible. Where permissible componentry is unavailable or unsuitable, the design has called for equipment that is rated for use in either Class I Division 1 or Class I Division 2 pursuant to Article 500.5 of the NEC depending on the potential exposure of the particular componentry to ignitable or explosive atmospheres.

The petitioner recognizes that there may be some componentry which may be suitable for classification for use in Class I Division 1 or Class I Division 2 locations, but which do not meet the precise requirements to be certified as permissible and vice versa. However, the petitioner also recognizes that the “permissible” designation takes into account the dynamic and largely non-engineered environment encountered in typical



mining operations while the NEC Class I Division 1 and 2 designations refer to primarily static, engineered environments.

Although regulated by MSHA, the underground environment at the Fredonia Project is more akin to the environments envisioned by the NEC classification than those envisioned by the MSHA permissibility certification requirements. If granted, the petition would allow the petitioner to use permissible equipment, where available, and equipment classified for use in either NEC Class I Division 1 or 2 environments, as appropriate.

I. Complying with the permissibility standards would subject miners to greater hazards than they are subjected to under current Wilson County conditions. Although the cited standard may not apply in this instance, but in the event that it did, requiring the petitioner to comply would subject miners to greater hazards than they would be subject to using the systems proposed by Wilson County. To the extent that permissible equipment is available, the electrical equipment specified by the petitioner for the Project is explosion proof, rated at either Class I Division 1 or Class I Division 2, as appropriate to its location. This design provides a greater level of protection from explosion than would permissible equipment, and also enables a far safer work environment based on all of the equipment's inherent advantages over similar equipment that has been certified permissible by MSHA. The petitioner states that the use of explosion proof, but not permissible equipment creates a much safer environment all around through the number of mechanisms.

The primary advantage presented by the equipment sought to be used is that it will allow for more precise measurement of potentially hazardous conditions through

remote monitoring and greater automation of the operation. Use of the specified equipment (for which a permissible equivalent is generally unavailable) will allow remote operation and monitoring of the operation, along with facilitating the “fail-to-safe” design of the operating circuitry. The primary reason for this is that the transmission components of the monitoring systems available in Class I Division 1 and Class I Division 2 compliant versions are not available in a permissible version in some instances. What this means is that, while the permissible equipment may be able to provide the necessary data, it cannot necessarily transmit the data either to a remote (in this case surface) location or locations nor can it communicate with a programmable logical control system which runs the “fail-to-safe” logic. On the other hand, the equipment currently specified for use at the Project can do all of that.

This enhanced transmission capability creates two significant safety advantages for the Project. First, it drastically lowers the number of miners who are needed underground at any given time. Absent the ability to transmit the monitored data to a remote location, miners would need to be physically underground to check readings and make determinations as to potential problems. With the pumping systems, for example, this could be as basic as periodically checking sight glasses to ensure that the pumps are functioning properly. With other systems it could involve physically reading digital or analog meters to make similar determinations. Little, if any, of this type of effort is necessary if the specified explosion proof, but not permissible, equipment is used.

Lowering the number of miners underground reduces the potential for exposure to flammable vapors and, in turn, increases safety overall by removing the miners from proximity to the potential hazard. In doing so, the proposed equipment actually increases

the number of people able to monitor data and respond to potential upset conditions. As currently configured, the system would allow remote monitoring of data not only at a central location at the surface, but also to other authorized users. Any alarms or warnings that might be sent by the system are heard and seen by every person necessary to respond almost regardless of when it occurs or where they might be. Thus, decisions that might end up saving lives could be made in essentially real time, rather than being delayed by having to be relayed by telephone. Second, the “fail-to-safe” system would operate without the need for human intervention or judgment. When any metric being monitored detected above or below a pre-set level, the system automatically initiates an orderly shut-down or power-down of specified equipment or, depending on the condition detected, a set of actions intended to reduce the hazard. For example, the permissibility rules dictate that certain changes must be made to ventilation when methane levels rise to 0.25 percent. Were the monitoring equipment used in the Project set to 0.10 percent, the system could automatically trigger an increase in ventilation which might prevent methane from reaching levels at which the regulations would require a change, thus reducing the level of potential methane exposure to a level well below the level which the regulations would require. The end result is that fewer miners are exposed to potential hazards. This also allows personnel to focus on other areas of concern such as evacuation procedures and other areas of importance.

II. The proposed action by the petitioner would provide no lesser degree of safety than application of the permissibility standards. Another basis for permitting modification of the cited standard’s application is that the petitioner’s proposed

alternative equipment provides at least the same measure of safety contemplated by the permissibility standards.

The explosion proof but not permissible equipment to be utilized in the Fredonia Project is much more scalable than their permissible counterparts. For instance, available permissible LEL monitors are triggered at 0.25 percent methane, the level at which regulatory action is required, and are not sensitive to levels below that. The explosion proof, but not permissible monitors specified for the project, however, can be set to levels much lower than 0.25 percent methane which will allow them to automatically trigger corrective measures before methane reaches a level at which such measures are required.

The petitioner has done extensive research and has taken great strides in ensuring that miners' safety is at the forefront of all decisions. For instance, not only does the selected equipment allow for early detection and warning of potentially hazardous conditions, but in the event of an emergency, the equipment can be automatically shut down through the use of remote monitoring. This is not possible with available MSHA permissible equipment. In fact, use of the explosion proof equipment would provide even greater protection than that required by the permissibility standard.

The measures and electrical equipment proposed by the petitioner, coupled with the ability to work in what is essentially a much safer environment, alleviates any potential hazards by providing a workplace with safeguards additional to those required by MSHA while avoiding the creation of hazards associated with non-explosion proof equipment.

The petitioner asserts that strict application of the existing standards would result in a diminution of safety to the miners involved with the Fredonia Project, while use of

the proposed equipment would afford no less protection (in fact, greater protection) from explosion hazards than would the available permissible equipment.

Dated: September 25, 2014

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Sheila McConnell  
Acting Director,  
Office of Standards, Regulations and Variances

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